

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include corrections of typographical errors on Fig. 4.

Attachment: Replacement sheet
Annotated sheet showing changes

REMARKS

This amendment is responsive to the Office Action dated June 16, 2008. In the amendment, claims 1, 3, 4, 6, and 9-14 remain pending in the application. Claims 9-14 have been added. *These amendments add no new matter.* Reconsideration and allowance of the pending claims are respectfully requested.

Claims 1, 3, 4 and 6 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,560,230 B1 to Li et al. ("Li"). This rejection is respectfully traversed.

Claim 1 recites: *[a] data transmitting apparatus for transmitting a plurality of real time streams and a non-real time stream over a common transmission path, comprising:*

a storing portion for storing first packets that compose the real time streams and second packets that compose the non-real time stream so that a first-in-first-out operation is respectively performed for every stream;

a counter portion for counting an interval time of the first packets for every said real time stream; and

a scheduler portion for transmitting the first packets stored for every said real time stream in the storing portion every said interval time period, calculating a transmission end time of the first packets from the interval time and a transmission time of the first packets of each of the real time streams for every said real time stream and transmitting a first packet whose transmission end time is the earliest in the first packets when the transmission times of the first packets overlap, and transmitting the second packets when the transmission intervals of said first packets are longer than the transmission times of the second packets.

These claimed features are not disclosed nor suggested by Li. Li discloses a method and apparatus for scheduling data packets for transmission over a data link. (Li, col. 3, lines 56-57.) Li discloses that scheduling data packets for transmission, "[i]ncoming packets are sorted by a classifier into classes according to a policy which includes a set of classification rules." (Li, col. 6, lines 47-49.) "At any given time a enterprise service point ("ESP") 24 may hold backlogged data

packets which are waiting to be forwarded to a destination and which are classified in one or more of the classes.” (Li, col. 7, 13-15.)

According to Li, “packets are classified and inserted into a scheduler 50 which has a structure mirroring that of [a] policy tree” comprised of nodes and leaves. (Li, col. 8, lines 18-20.) “Scheduler 50 schedules the transmission of the packet out an output port. Scheduler 50 uses the policy associated with the port to determine the sequence in which to send any packets which are backlogged waiting to be sent through the output port.” (Li, col. 8, lines 29-32.)

Li discloses that the scheduler 50 places each packet in a queue 55. (Li, col. 8, lines 36-37.) “Queues 55 are logical first in, first out (“FIFO”) queues.” (Li, col. 8, lines 47-48.) “Scheduler 50 has a scheduling engine 60 corresponding to each node of policy tree 39.” (Li, col. 8, lines 63-64.) “Each leaf scheduling engine 60 selects a group of eligible packets 51 from the group of all packets 51 at the heads of the queues 55 in the group 56 associated with that leaf scheduling engine 60.” (Li, col. 11, lines 7-11.)

Further, Li discloses “the leaf scheduling engine 60 will select for transmission the eligible packet 51 which meets a selection criterion.” (Li, col. 11, lines 35-37.) “Preferably the selection criterion is a first to finish selection criterion so that the eligible packet that has the earliest finish time F is selected.” (Li, col. 11, lines 38-40.) Lee also discloses, “[a]n alternative, less preferable, approach is to use a selection criterion which selects for transmission the eligible packet with the earliest start time S.” (Li, col. 11, lines 40-42.)

However, Li fails to disclose or suggest “[a] data transmitting apparatus for transmitting a plurality of real time streams and a non-real time stream over a common transmission path, comprising: ...

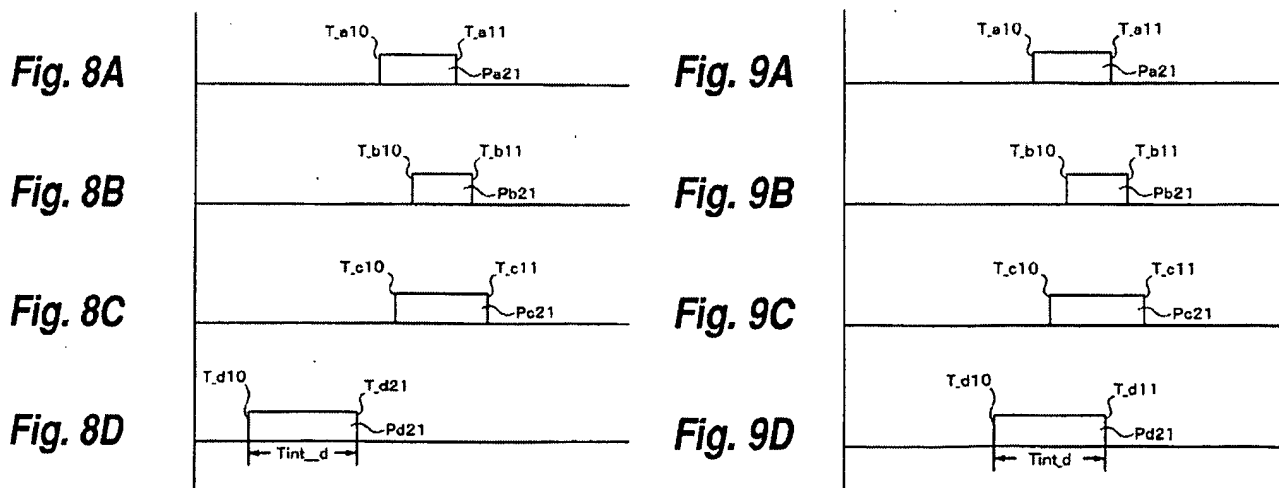
a scheduler portion for... transmitting a first packet whose transmission end time is the earliest in the first packets when the transmission times of the first packets overlap, and transmitting the second packets when the transmission intervals of said first packets are longer than the transmission times of the second packet[.]” as recited in claim 1.

An object of the Applicant's invention is to provide a data transmitting apparatus and a data transmitting method that allow a non-real time stream to be effectively transmitted without adversely affecting the transmissions of the real time streams when they are transmitted over one transmission path. (Specification, pg. 4, line 27 - pg. 5, line 6.)

Purely by way of example, Applicant's Figs. 8A-8D and 9A-9D are reproduced below to explain a difference between what is recited in Applicant's claim 1 and that which is disclosed by Li. In describing Figs. 8A-8D and 9A - 9D, Applicant's specification discloses:

[A] transmission end time T_{d11} of the packet $Pd21$ of the non-real time stream $NS1$ is earlier than a scheduling time T_{a10} of the packet $Pa21$ (see Fig. 8A) of the real time stream $RS1$, a scheduling time T_{b10} of the packet $Pb21$ (see Fig. 8B) of the real time stream $RS2$, and a scheduling time T_{c10} of the packet $Pc21$ (see Fig. 8C) of the real time stream $RS3$. In this case, since the packet $Pd21$ of the non-real time stream $NS1$ is transmitted first, it does not adversely affect the transmissions of the packets $Pa21$, $Pb21$, and $Pc21$ of the real time streams $RS1$, $RS2$, and $RS3$, the packet $Pd21$ of the non-real time stream is permitted to be transmitted.

Now, it is assumed that there is a transmission request for the packet $Pd21$ of the non-real time stream $NS1$ at the transmission start time T_{d10} (see Fig. 9D). In this case, the transmission end time T_{d11} of the packet $Pd21$ of the non-real time stream $NS1$ is later than the scheduling time T_{a10} of the packet $Pa21$ (see Fig. 9A) of the real time stream $RS1$, the scheduling time T_{b10} of the packet $Pb21$ (see Fig. 9B) of the real time streams $RS2$, and the scheduling time T_{c10} of the packet $Pc21$ (see Fig. 9C) of the real time streams $RS3$. In this case, since the transmission of the packet $Pd21$ of the non-real time stream $NS1$ adversely affects the transmissions of the packets $Pa21$, $Pb21$, and $Pc21$ of the real time streams $RS1$, $RS2$, and $RS3$, the packet $Pd21$ of the non-real time stream is not permitted to be transmitted and placed in the buffer memory 34 on standby. (Specification, pg. 23, line 7 - pg. 24, line 9, underlining added.)



Li discloses that the selection criterion is preferably a first to finish selection criterion so that the eligible packet that has the earliest finish time F is selected, and less preferably a selection criterion which selects for transmission the eligible packet with the earliest start time S. (Li, col. 11, lines 40-42.) In contrast to Li, Applicant's claim 1 recites "*transmitting a first packet whose transmission end time is the earliest in the first packets when the transmission times of the first packets overlap, and transmitting the second packets when the transmission intervals of said first packets are longer than the transmission times of the second packets.*"

Li's disclosure makes no mention of transmitting second packets that compose the non-real time stream when the transmission intervals of first packets that compose the real time streams are longer than the transmission times of the second packets.

Li thus clearly fails to disclose or suggest all the features recited in Applicant's claim 1. Claim 3 depends from claim 1 and thus incorporates the distinct features recited therein, as well as their separately recited patentably distinct features.

For reasons similar to those given above, Li clearly fails to disclose or suggest all the features recited in Applicant's claim 4. Claim 6 depends from claim 4 and thus incorporates the distinct features recited therein, as well as their separately recited patentably distinct features.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of the claims under 35 U.S.C. § 102(e) as being anticipated by Li. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) ("A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."); *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) ("The identical invention must be shown in as complete detail as is contained in the ... claim.").

Claims 3 and 6 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Li in view of U.S. Pat. No. 5,539,729 to Bodnar ("Bodnar"). This rejection is traversed.

Claims 3 and 6 respectively depend from independent claims 1 and 4 and thus incorporate the distinct features recited therein, which are absent from Li as noted in detail above.

Bodnar fails to remedy the deficiencies of Li. Bodnar discloses a counter is associated with the higher priority packet stream, so that when the counter reaches a predetermined number, the higher priority packet stream is disabled, so that the lower priority packet stream may be processed. When the counter reaches the predetermined number, interrupts are disabled, thus inhibiting processing of the higher priority packet stream. (Bodnar, col. 3, lines 9-27.)

However, there is clearly no discussion in Bodnar of transmitting second packets that compose the non-real time stream when the transmission intervals of first packets that compose the real time streams are longer than the transmission times of the second packets.

Accordingly, like Li, Bodnar fails to disclose or suggest “*transmitting a first packet whose transmission end time is the earliest in the first packets when the transmission times of the first packets overlap, and transmitting the second packets when the transmission intervals of said first packets are longer than the transmission times of the second packets[,]*” as recited in claim 1 and 4.

Dependent claims 3 and 6 are thus distinct from even the combination of Li and Bodnar, for their incorporation of these features as well as for their separately recited patentably distinct features.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 3 and 6 under 35 U.S.C. § 103(a) as being unpatentable over Li in view of Bodnar. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.); *see also* MPEP 2143.03.

CONCLUSION

In view of the foregoing arguments, all claims are believed to be in condition for allowance. If any further issues remain, the Examiner is invited to telephone the undersigned to resolve them.

This response is believed to be a complete response to the Office Action. However, Applicant reserve the right to set forth further arguments supporting the patentability of their claims, including the separate patentability of the dependent claims not explicitly addressed herein, in future papers. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicant expressly do not acquiesce to the taking of Official Notice, and respectfully request that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 C.F.R. § 1.104(d)(2) and MPEP § 2144.03.

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Respectfully submitted,

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ANNOTATED SHEET SHOWING CHANGES

Fig. 4

